

CLAIMS

What is claimed is:

1. A system for practicing fishing casts, comprising:
 - a motorized mechanical fish having a plurality of wheels;
 - a lure for being cast near to said fish;
 - a detection mechanism within said fish for detecting said lure; and
 - an electro-mechanical control module also within said fish for managing the fish's movements while seeking and having detected said lure.
2. The system of claim 1, further comprising:
 - a chassis from which extend said wheels;
 - a mechanical steering mechanism connected to said wheels; and
 - a fish-shaped outer shell attached to said chassis and having front and rear ends.
3. The system of claim 2, wherein wheels are attached to said chassis via a spring suspension.
4. The system of claim 2, wherein tires of said wheels are covered with cast hard rubber.
5. The system of claim 2, further comprising:

a plurality of lugs and mounting detents protruding from said chassis, thereby enabling the attachment and detachment of said fish-shaped outer shell.

6. The system of claim 2, further comprising:

a rechargeable battery mounted to said chassis.

7. The system of claim 6, wherein the plug-in unit for said battery is accessible for charging without removing said battery from said chassis.

8. The system of claim 2, wherein said detection mechanism further comprises:

active and passive photo sensors; located within a front end of said outer shell; and

a passive/active switch also located within said outer shell for enabling the user to select between passive and active modes of detection.

9. The system of claim 2, wherein said electro-mechanical control mechanism further comprises

a timer.

a tail motor;

a radio receiver; and

an antenna, all located within said outer shell; and

a drive motor, located within said chassis.

10. The system of claim 2, wherein said mechanical steering mechanism further comprises:

a front-wheel steering linkage;

a steering solenoid having a plurality of protruding lugs thereby permitting automated steering; wherein said steering solenoid can also be positioned to allow for manual steering via said remote controller.

11. The system of claim 10, further comprising:

wherein said steering solenoid has a plurality of positions, thereby enabling automated steering in a straight line or steering in a circle of predetermined radius, or combining the two to form loops of varying length and radius, depending upon which of said positions is selected.

12. The system of claim 2, wherein said fish-shaped outer shell is constructed of fiber glass and polyester resin.

13. The system of claim 12, wherein said fish-shaped outer shell is fabricated to resemble a bone fish.

14. The system of claim 12, wherein said fish-shaped outer shell is fabricated to resemble a bass fish.

15. The system of claim 12, wherein said fish-shaped outer shell further comprises:

a hole near a front end of said outer shell, for providing an unrestricted path for transmission and reception of infrared light beams used in conjunction with said mechanism for the detection of said lure;

two holes near said front end of said outer shell, for providing an unrestricted path for the emission of visible light from two LEDs which resemble fish eyes;

a plurality of ports at the base of said outer shell providing a path for sound to exit from a plurality of speakers;

a hole near the top of said outer shell, for providing an outlet through which an external antenna may extend; and

a hinged tail, providing capability of motion of said tail when used in conjunction with said tail motor.

16. The system of claim 15, wherein an internal antenna is substituted for the above external antenna, and said hole is either not created or is sealed.

17. The system of claim 1, further comprising:

a remote controller for directing the motion of said fish, said remote controller comprising:

a battery, installably and rechargeably located within a body of said remote controller;

a battery power display located on a front panel of said remote controller;

an antenna located either within or protruding from said body of said remote controller;

an emergency stop button located in an easily-accessible portion of said front panel;

forward/reverse and left/right toggle switches located within said front panel, for control of said fish while in a manually-operated (manual) mode;

a program stop/start button located within said front panel, for transitioning from said manual mode to an automated mode; and

a program selection/display switch located within said front panel.

18. The system of claim 17, wherein said selection/display switch enables an operator to place the mechanical fish into said automated mode wherein said mechanical fish travels either in a circle or in a plurality of loop modes.

19. The system of claim 18, wherein the diameter of said circle mode is controlled by said steering solenoid.

20. The system of claim 18, wherein the diameter of the semicircles of said loops are regulated by said steering solenoid; and

the length of straight travel between the two semicircles is regulated by said timer and varies depending upon which setting is selected on said program selection/display switch.

21. The system of claim 1, wherein said lure further comprises:

a lead dumbbell eye, to more closely replicate the casting nature of a weighted fishing lure;

an outer covering;

a battery;

a circuit board;

three infrared light emitting diodes (LEDs) attached to said circuit board and visible through said outer covering; and

an additional LED which emits green light to enable the user to know the infrared LEDs are emitting IR light.

22. The system of claim 21, wherein said outer covering is constructed of a clear, infrared-transparent hard plastic to ensure durability of said lure.

23. The system of claim 22, wherein said circuit board periodically sends the necessary electrical current to said infrared LEDs enabling them to emit pulses of infrared light.

24. The system of claim 1, wherein said lure further comprises:

an unweighted eye, to more closely replicate the casting nature of a fishing fly;

a closed loop hook, to prevent unintentional snagging; and

a head assembly;

wherein said lure is either coated with or composed of a reflective material.

25. The system of claim 24, wherein said head assembly is coated with a plastic cast or epoxy coated head for purposes of attaching said reflective tail material to said closed loop hook.
26. The system of claim 24, wherein said reflective tail material is composed of a mylar tinsel capable of efficiently reflecting infrared light.
27. The system of claim 26, wherein said reflective tail material extends along and substantially beyond the length of said closed loop hook.
28. The system of claim 2, further comprising:
- an ambient light filter attached to said outer shell, to limit the entry of unwanted visible light thereby restricting light flow to infrared light;
 - a mirrored collector recess positioned inwardly from said concentrating lens, to direct the incoming light signals to said photo sensor;
 - a photo sensor positioned at the center of said mirrored collector recess; and
 - an electronic sensing module positioned inside said detection mechanism, for coordinating signals received from said photo sensor;
- wherein said electronic sensing module establishes an operator-configurable detection zone outside of which all light signals are ignored.
29. The system of claim 28, wherein said photo sensor is responsive only to infrared light emitted or reflected by said lure when said lure is within said detection zone.

30. The system of claim 28, wherein said electronic sensing module further comprises a plurality of digital logic gates and Schmitt trigger inverters.

31. The system of claim 30, wherein said plurality of digital logic gates are designed to restrict detection to pulses of infrared light received at a particular frequency.

32. The system of claim 30, wherein said plurality of digital logic gates restrict detection to pulses of infrared light received at or above a threshold amplitude.

33. The detection zone of claim 28, wherein said detection zone is semicircular and the diameter of said zone is adjustable.

34. The system of claim 28, wherein said detection mechanism further comprises:
 an array of infrared light emitting diodes (LEDs) mounted within a trough, for emitting a ring of light which is to be reflected by said lure;
 wherein said trough acts as a buffer wall thereby ensuring that said photo sensor is not accidentally triggered by light from said LED array.

35. The system of claim 34, wherein walls of said trough are highly reflective mirrors capable of directing the infrared light emitted by said LEDs to cover said detection zone.

36. The system of claim 34, wherein an outer wall of said trough is slightly higher than an inner buffer wall, thereby eliminating any blind spot from the center of said ring of emitted infrared light.

37. The system of claim 34, wherein said electronic sensing module is designed to power said LEDs causing them to periodically emit infrared light at the identical frequency said series of digital logic gates are designed to admit reception.

38. The electro-mechanical control module of claim 1, further comprising:
an electrical circuit;
a logic module;
a programmed seeking mode; and
a programmed detected mode.

39. The system of claim 38, wherein said electrical circuit receives a signal of detection from said photo sensor and conveys this message to said logic module via said series of digital logic gates.

40. The system of claim 38, wherein said control module regulates all of the actions of said fish while in either of its alternate seeking or detected modes.

41. The system of claim 38, wherein said seeking mode is the default mode of said fish.

42. The system of claim 38, wherein said mechanical fish, while in said seeking mode, exhibits the following traits:

- said two LED eyes flash at a configurable frequency;
- said tail motor oscillates said tail at a configurable frequency;
- said two speakers are silent; and
- said detection mechanism is active.

43. The system of claim 38, wherein said detected mode begins when said logic module receives a signal from said photo sensor confirming the presence of a lure.

44. The system of claim 38, wherein while in said detected mode said fish exhibits the following traits:

- said drive motor stops, bringing the fish to a stop;
- said two LED eyes glow brightly;
- said two speakers emit a sound similar to the drag slipping when fishing line is quickly pulled from a reel; and
- said tail motor stops, bringing the motion in the tail of the fish to a stop.

45. The system of claim 38, wherein the actions of said fish differ substantially between said detected mode and said seeking mode such that the user of said practice system can determine whether or not a successful cast was made.

46. A mechanical practice fish, comprising:
a motor-driven chassis;

an electronic module located within said chassis;
a lure, for being cast near to said fish;
electronic detection means for detecting said lure; and
a styled body shape for resembling a specific fish.

47. The practice fish of claim 46, wherein said electronic detection means can operate either in a passive mode or in an active mode.

48. The practice fish of claim 47, wherein said electronic detection means operates in said passive mode by emitting light pulses to a reflecting portion of said lure, waiting for said reflecting portion to reflect said pulses, and then detecting the return of said pulses.

49. The practice fish of claim 47, wherein said electronic detection means operates in said active mode by awaiting light pulses to be emitted from said lure, and then detecting the return of said pulses.

50. A method of utilizing a practice fish, comprising:
activating said fish into a seeking mode;
activating an IR beacon within a lure;
repeatedly casting said lure near to said fish; and
detecting said IR beacon via an electronic module located within said fish, thereby changing the mode of said fish from seeking into detected.

51. A method of utilizing a practice fish, comprising:

- activating said fish into a seeking mode;
- sending IR signals from within said fish;
- repeatedly casting a lure near to said fish;
- reflecting said IR signals from said lure;
- detecting said reflected IR signals via an electronic module located within said fish,
- thereby
- changing the mode of said fish from seeking into detected.